Mobile-Ready Office

User Guide

Installation, Configuration, and Management

MOBILE-READY OFFICE
Quick Reference Guide
1 SELECT POWER
Connect one of the supplied power cords, either 120V AC or 12V DC, to the MRO power connector and the power source.
2 CONNECT ANTENNAS
The MRO accepts a variety of cellular and WiFi antenna types. Compact whips or blade antennas are included.
3 POWER UP
Power up the MRO by turning on the power switch on the router panel. Wireless access will become available after a short boot up cycle.
SIERRA WIRELESS
POWER

User Manual

Preface

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Intended Use

Use this product only for the purpose it was designed for; refer to the datasheet and user documentation. For the latest product information, visit us online at www.feeneywireless.com.

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Contents

Overview 3
Intended Audience 3
Scope 3
Specifications 4
Antenna Specifications 5
Device Information 6
Router Log-In Information 6
Modem Log-In Information 6
Installation Steps 6
Packing List 6
Connecting the Source Power 7
Antenna Mounting 7
Mounting Cellular Antennas 7
Mounting Wi-Fi Antennas 7
Antenna Connections 7
Connecting Cellular Antennas 7
Connecting Wi-Fi Antennas 8
Ethernet Connections 8
Verify Connection to the Internet 9
Contacting Us 9
Online Library 10
FCC Compliance 10

Overview

The Feeney Wireless Mobile-Ready Office (MRO) is a multi-modem, multi-carrier Wi-Fi solution, allowing users to harness some of the highest throughput available for field and mobile applications. The MRO is optimized to take advantage of overlapping coverage footprints and provide redundancy in areas with poor signal. In areas with poor signal strength the MRO uses failover logic to choose the modem with the best connection to continue uninterrupted service, mitigating outages, congestion, interference, and coverage gaps.

Intended Audience

This document is intended for users responsible for the installation and initial set-up of the MRO and assumes the installer possesses a basic working knowledge of computer networking, wireless routing, and network administration.

For further information on using your device, please refer to the following relevant documentation:

- Cradlepoint MBR1400 Configuration User Guide, available at http://www.cradlepoint.com/
- AirLink GX440 User Guide, available at http://www.sierrawireless.com/
- ALEOS Configuration User Guide, available at http://www.sierrawireless.com/
- Skyus and Skyus-E Quick Start Guides, available at http://www.feeneywireless.com/

Scope

This User Manual focuses on the installation and configuration of the MRO system. For information necessary above and beyond this level of operation, please consult the resources listed above or contact your FW representative.

Figure 1: MRO Interior

Specifications

Hardware	
Input Voltage	• 12V DC • 120V AC Kit includes DC vehicle cord and NEMA 5-15P (three-prong) AC cord.
Power Consumption	• Router (Typical): 500mA at 12VDC, 1A peak per the supplied router • Modem (Typical): 500mA at 12VDC, 1A peak per supplied modem Varies based on system configuration.
Environmental	• Operating Temperature: -0°C to 40°C (32°F to 104°F) • Storage Temperature: -40°C to 85°C (-40°F to 185°F)
Housing	Pelican 1510 Carry On Case
Dimensions	13.81 x 9 x 22 inches
Weight	• MRO (without modems installed): Approx. 27 lbs. • GX440 Modem (ea.): 12 oz. Nominal additional weight with antenna array.
Mounting	Optional wall mounting plate and bracket
Data Interface	Wireless, Ethernet (LAN, WAN), USB, depending on configuration
Antenna Connections	See Antenna Specifications.
Cellular	
Technologies	LTE with fallback to HSPA+, HSPA, UMTS, EDGE, GPRS, EVDO, 1xRTT (depending on the modems used)
Carriers	Sprint, Verizon, AT&T, T-Mobile
Bands	See the specification sheet for the modem installed.
Standards/Approvals	FCC Part 15, Class B

Antenna Specifications

Due to the available customization options for the MRO, multiple antenna configurations are possible. To ensure that your system is configured for optimal performance please contact your FW sales representative.

Figure 2: Antenna Plate

Depending on the configuration, the MRO is typically shipped with one or more portable wireless "blade" antennas with the characteristics shown in the following table.

Attribute	Value
Operating Frequencies	• 824 – 894 MHz • 880 – 960 MHz • 1575 MHz • 1710 – 1880 MHz • 1850 – 1990 MHz • 1920 – 2170 MHz • 2400 – 2500 MHz
Polarization	Linear
Peak Gain	3 dBi
Dimensions	6.3 in. L x 0.36 in. W
Voltage Standing Wave Ratio (~:1)	2:5:1

For Wi-Fi antenna specifications, see the Cradlepoint MBR1400 Configuration User Guide available at http://www.cradlepoint.com/.

NOTE: Wi-Fi antenna connectors are Reverse Polarity TNC (RP-TNC). Avoid connecting a non-reverse polarity connector to one of these ports to avoid damage to the connector center pin.

Device Information

The MRO router and modems are preconfigured for optimum performance in your unique deployment. Logging into the devices is not typically required for normal operation of the MRO.

Router Log-In Information

Router information is located on the router label. To access the router administration pages, open a Web browser and type in the router IP address "http://192.168.0.1" in the address bar. The Administrator Login page will appear. Log in using the default administrator password found on the router label. The password is typically the last eight digits of the router's MAC address. See the Cradlepoint MBR1400 Configuration User Guide for more information.

Modem Log-In Information

Modem information is located on the MRO label. To log in to the modem administration page, use the URL, port number, and login credentials provided on the label, as shown below.

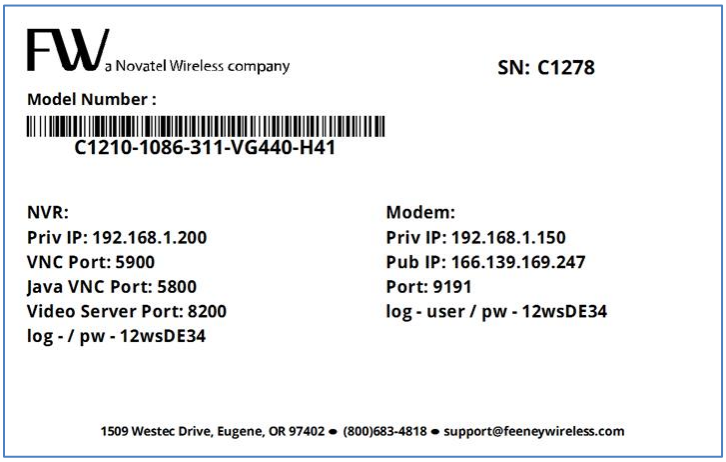

Figure 3: MRO Label

Installation Steps

1. Inspect the package contents and compare against the packing list.
2. Connect power (AC or DC) from the power source to the MRO.
3. Connect cellular, GPS, and Wi-Fi antennas to the device.
4. Turn on the power switch.
5. Verify activation of the device.
6. Verify connection to the Internet.

Packing List

The MRO is a modular system that is shipped in a wide variety of configurations. After removing the unit from the shipping container, inspect the packing list to ensure that your complete order has arrived. If any items are missing or damaged, contact FW support.

Connecting the Source Power

The MRO is equipped with both an AC and DC power cord. Connect the appropriate cable for your power source to the MRO and the power source. The connectors are keyed for proper orientation. Be sure that you mate the connectors properly.

Antenna Mounting

Mounting Cellular Antennas

When using a cable to an antenna placed away from the modem, minimize the length of your cable. All gain from a more advantageous antenna placement can be lost with a long cable to the MRO.

When mounting the GPS antenna, the less the cable is wrapped and bound together, the better it will perform. Place the antenna where it has a good view of the sky (> 90° angle view).

Mounting Wi-Fi Antennas

Wi-Fi antennas should be installed in locations that allow for complete coverage of the desired connected area. Some antennas are omnidirectional and can be placed in the center of the desired coverage area, whereas, directional antennas should be placed in locations that direct the signal toward your desired coverage area. Refer to the installation manual of your antenna or contact FW for further instruction.

Antenna Connections

Connecting Cellular Antennas

The cellular and GPS antennas for each modem connect to the ports shown below.

Figure 4: Modem Antenna Connections

When using a Multiple Input/Multiple Output (MIMO) cellular antenna, it can be attached to either the **ANT 1** or **ANT 2** connector. Connect GPS or auxiliary antennas to the designated connectors.

> **NOTE:** The use of at least one modem for GPS purposes is recommended to allow for more effective remote monitoring of possible cellular issues.

You can use one or two USB cellular modems for failover protection. Follow the connection pattern shown below when using USB cellular modems.

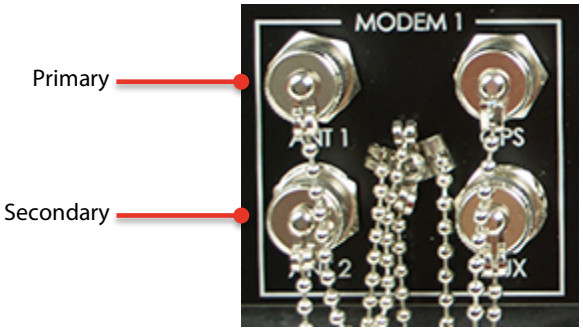

Figure 5: USB Failover Connections

Connecting Wi-Fi Antennas

When connecting Wi-Fi antennas to the MRO, start with **WIFI 1** and progress to **WIFI 2** and **WIFI 3**.

Figure 6: Wi-Fi Antenna Connections

Ethernet Connections

One WAN and four LAN RJ-45 connectors are provided on the side panel of the MRO case as shown below. These connectors have been implemented according to the configuration you ordered.

Figure 7: WAN and LAN Connectors

Verify Connection to the Internet

After connecting power, antennas, and other connections, verify that you have a live connection to the internet. To do this, follow the steps below.

1. Open a Windows **Command Prompt** (**Start > All Programs > Accessories > Command Prompt**).
2. In the **Command Prompt** Window, type: Ping 4.2.2.1. (This is a public DNS server.)
3. Press **Enter.**
4. Ensure you receive the following response, as seen in Figure 8.

NOTE: If you see "Request time out," your device is not communicating over the Internet.

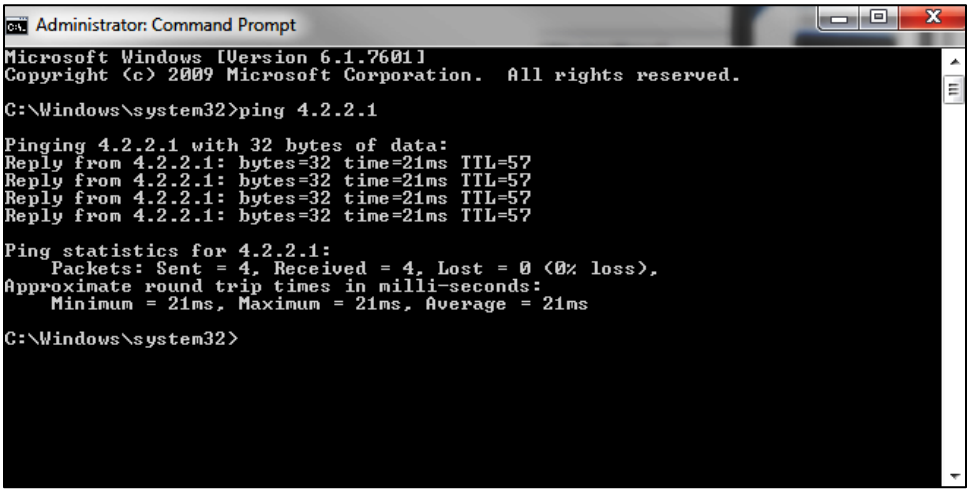
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Windows\system32>ping 4.2.2.1
Pinging 4.2.2.1 with 32 bytes of data:
Reply from 4.2.2.1: bytes=32 time=21ms TTL=57
Reply from 4.2.2.1: bytes=32 time=21ms TTL=57
Reply from 4.2.2.1: bytes=32 time=21ms TTL=57
Reply from 4.2.2.1: bytes=32 time=21ms TTL=57
Ping statistics for 4.2.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 21ms, Maximum = 21ms, Average = 21ms
C:\Windows\system32>

Figure 8: Verifying Internet Connection

Contacting Us

For help with installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, contact us during business hours: Monday through Friday, excluding holidays, between 8 a.m. and 5 p.m. Pacific Time.

Contact Us	
Support E-Mail	support@feeneywireless.com
Telephone	(800) 683-4818
Website	www.feeneywireless.com
Mailing Address	P.O. Box 2549, Eugene, OR 97402

When contacting technical support, please have the following information on-hand:

1. MRO serial number
2. Date that you received your device
3. Brief description of the problem

Online Library

For other documentation, see the document library at:

http://feeneywireless.com/documents

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. FW does not guarantee that interference will not occur in a particular installation.

Operation is subject to the following conditions:

a. This device may not cause harmful interference.
b. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

a. Reorient or relocate the receiving antenna.
b. Increase the distance between the equipment and the receiver.
c. Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
d. Consult the dealer or an experienced radio/TV technician for help.

Exposure to RF radiation - To comply with FCC RF exposure compliance requirements, for mobile configurations, a separation distance of at least 20cm must be maintained between the antenna of this device and all persons. Do not collocate or operate this device in conjunction with any other antenna or transmitter.